IN THE CLAIMS

1. (Currently amended) A control method for a data transfer device that comprises a data receiver for receiving write data to be stored in a ~~storage device~~ disk drive; a data control unit for transferring in block units the write data received by the data receiver to the ~~storage device~~ disk drive; and a ~~data storage unit~~ cache memory for temporarily storing serial data that is read from a storage area of the ~~storage device~~ disk drive,

wherein the method is performed by the data control unit and comprises the steps of:

reading the serial data from the ~~storage device~~ disk drive in block units and temporarily storing this serial data in block units in the data storage unit;

comparing a block of data in a destination storage area of the disk drive that is a write destination of the write data, and the serial data read from the storage area of the disk drive and temporarily stored in the data storage unit;

when, ~~with respect~~ in response to receiving the ~~received~~ write data, [[a]] the block of data in [[said]] the destination storage area of the ~~storage device~~ disk drive that is a write destination of the write data, and the serial data read from the storage area of the ~~storage device~~ disk drive

and temporarily stored in the data storage unit compared therewith, are the same, updating the serial data temporarily stored in the data storage unit by means of the write data so that the updated serial data is compared to the next-received write data; and

when, ~~with respect~~ in response to receiving the ~~received~~ write data, [[a]] the block of data in [[said]] the destination storage area of the ~~storage device~~ disk drive that is a write destination of the write data, and the serial data read from the storage area of the ~~storage device~~ disk drive and temporarily stored in the data storage unit compared therewith, are different, generating a security code based on the serial data temporarily stored in the data storage unit, adding the generated security code to the serial data temporarily stored in the data storage unit, transferring in block units this serial data having the security code added thereto to the ~~storage device~~ disk drive, reading the serial data stored in the block in the destination storage area of the ~~storage device~~ disk drive constituting the write destination of the write data, and updating the data temporarily stored in the data storage unit by means of the write data so that the updated data is compared to the next-received write data.

2. (Previously presented) The control method for the data transfer device according to claim 1, wherein serial write data that is serially received by the data receiver is not necessarily transferred to successive areas of the block in the order in which this data is received.

3. (Currently amended) A data transfer circuit, comprising:

a data receiver for receiving write data to be stored in a ~~storage device~~ disk drive;

a data control unit for transferring the write data received by the data receiver to the ~~storage device~~ disk drive; and

a data storage unit for temporarily storing serial data that is read from a storage area of the ~~storage device~~ disk drive,

wherein:

the data control unit reads the serial data from the ~~storage device~~ disk drive in block units and temporarily stores this serial data in block units in the data storage unit, and compares a block of data in a destination storage area of the disk drive that is a write destination of the

write data, and the serial data read from the storage area of the disk drive and temporarily stored in the data storage unit;

when, with respect to the received write data, [[a]] the block of data in [[said]] the destination storage area of the ~~storage device~~ disk drive that is a write destination of the write data, and the serial data read from the storage area of the ~~storage device~~ disk drive and temporarily stored in the data storage unit compared therewith, are the same, the data control unit updates the serial data temporarily stored in the data storage unit by means of the write data; and

when, with respect to the received write data, [[a]] the block of data in [[said]] the destination storage area of the ~~storage device~~ disk drive that is a write destination of the write data, and the serial data read from the storage area of the ~~storage device~~ disk drive and temporarily stored in the data storage unit compared therewith, are different, the data control unit generates a security code based on the serial data temporarily stored in the data storage unit, adds the generated security code to the serial data temporarily stored in the data storage unit, transfers in block units this serial data having the security code added thereto to the ~~storage device~~ disk drive, reads the serial data stored in the block

in the destination storage area of the ~~storage device~~ disk drive constituting the write destination of the write data, and updates the data temporarily stored in the data storage unit by means of the write data.

4. (Previously presented) The data transfer circuit according to claim 3, wherein serial write data that is serially received by the data receiver is not necessarily transferred to successive areas of the block in the order in which this data is received.

5. (Currently amended) A disk array device, comprising:

a host interface for receiving write data to be stored in a disk drive from an information processing device; and

a data controller that transfers in block units the write data received by the host interface to the disk drive,

wherein:

the data controller comprises a data receiver for receiving write data to be stored in the disk drive from the host interface; a data control unit for transferring in block units the write data received by the data receiver to the disk drive; and a ~~data storage unit~~ cache memory for storing serial data read from the disk drive;

the data control unit reads the serial data from the disk drive in block units and then stores this serial data in the ~~data storage unit~~ cache memory;

when, with respect to the received write data, a block of data in said storage area of the disk drive and the serial data read from the storage area of the disk drive and stored in the ~~data storage unit~~ cache memory are the same, the data control unit updates the serial data stored in the ~~data storage unit~~ cache memory by means of the write data; and

when, with respect to the received write data, a block of data in said storage area of the disk drive and the serial data read from the storage area of the disk drive and temporarily stored in the ~~data storage unit~~ cache memory are different, the data control unit generates a security code based on the serial data temporarily stored in the ~~data storage unit~~ cache memory, adds the generated security code to the serial data temporarily stored in the ~~data storage unit~~ cache memory, transfers this serial data having the security code added thereto to the disk drive, reads the serial data stored in the block in the storage area of the disk drive constituting the write destination of the write data, and updates the data temporarily stored in the ~~data storage unit~~ cache memory by means of the write data.

6. (Previously presented) The disk array device according to claim 5, wherein the host interface is connected to the information processing device via a network; and serial write data that is serially received by the host interface is not necessarily transferred to successive areas of the block in the order in which this data is received.

7. (Currently amended) A disk array device, comprising:

a host interface for receiving write data to be stored in a disk drive from an information processing device;

a data controller that transfers in block units the write data received by the host interface to the disk drive;

a processor for exercising overall control; and

memory for storing data,

wherein:

the processor reads serial data from the disk drive in block units and stores this serial data in the memory;

when, with respect to the received write data, a block of data in said storage area of the disk drive and the serial data read from the storage area of the disk drive and stored in the memory are the same, the processor updates the serial data stored in the memory by means of the write data; and

when, with respect to the received write data, a block of data in said storage area of the disk drive and the serial data read from the storage area of the disk drive and stored in the memory are different, the processor generates a security code based on the serial data stored in the memory, adds the generated security code to the serial data stored in the memory, transfers this data having the security code added thereto to the disk drive, reads the serial data stored in the block in the storage area of the disk drive constituting the write destination of the write data, and updates the data stored in the memory by means of the write data.

8. (Currently amended) A disk array device, comprising:

a channel control unit for receiving write data to be stored in a disk drive from an information processing device;

a disk control unit that performs processing relating to the writing of data to the disk drive; and

cache memory for storing data that is exchanged between the channel control unit and the disk control unit,

wherein:

the channel control unit comprises a data receiver for receiving the write data; a data control unit for transferring in block units the write data received by the data receiver to

the cache memory; and a data storage unit for storing serial data received from a storage area of the disk drive;

the data control unit reads serial data stored in the disk drive in block units from the cache memory and then stores this serial data in the data storage unit;

when, with respect to the received write data, a block of data in said storage area of the disk drive and the serial data read from the storage area of the disk drive and stored in the data storage unit are the same, the data control unit updates the serial data stored in the data storage unit by means of the write data; and

when, with respect to the received write data, a block of data in said storage area of the disk drive and the serial data read from the storage area of the disk drive and stored in the data storage unit are different, the data control unit generates a security code based on the serial data stored in the data storage unit, adds the generated security code to the serial data stored in the data storage unit, transfers this serial data having the security code added thereto to the cache memory, reads the serial data stored in the block in the storage area of the disk drive constituting the write destination of the write data from the cache memory, and

updates the data stored in the data storage unit by means of the write data.

9. (Previously presented) The disk array device according to claim 8, wherein the channel control unit comprises an interface, which is connected to the information processing device via a network and receives the write data;

the data receiver receives the write data from the interface; and

serial write data that is serially received by the interface is not necessarily transferred to successive areas of the block in the order in which this data is received.

10. (Currently amended) A disk array device, comprising:

a channel control unit for receiving write data to be stored in a disk drive from an information processing device;

a disk control unit that performs processing relating to the writing of data to the disk drive; and

cache memory for storing data that is exchanged between the channel control unit and the disk control unit,

wherein:

the disk control unit comprises a data read unit, which reads the write data from the cache memory, a data control unit, which transfers in block units the write data read by the data read unit to the disk drive; and a data storage unit for storing serial data received from a storage area of the disk drive;

the data control unit reads the serial data from the disk drive in block units and then stores this serial data in the data storage unit;

when, with respect to the write data read from the cache memory, a block of data in said storage area of the disk drive and the serial data read from the storage area of the disk drive and stored in the data storage unit are the same, the data control unit updates the serial data stored in the data storage unit by means of the write data; and

when, with respect to the write data read from the cache memory, a block of data in said storage area of the disk drive and the serial data read from the storage area of the disk drive and stored in the data storage unit are different, the data control unit generates a security code based on the serial data stored in the data storage unit, adds the generated security code to the serial data stored in the data storage unit before transferring this serial data having the

security code added thereto to the disk drive, reads the serial data stored in the block in the storage area of the disk drive constituting the write destination of the write data, and updates the data stored in the data storage unit by means of the write data.

11. (Currently amended) A control method for a data transfer device that comprises a data receiver for receiving write data to be stored in a ~~storage device~~ disk drive; a data control unit for transferring in block units the write data received by the data receiver to the ~~storage device~~ disk drive; and a data storage unit for storing serial data that is read from a storage area of the ~~storage device~~ disk drive,

wherein the method is performed by the data control unit and comprises the steps of:

reading the serial data from the ~~storage device~~ disk drive in block units and storing this serial data in the data storage unit;

when, with respect to the received write data, a block of data in said storage area of the ~~storage device~~ disk drive and the serial data read from the storage area of the ~~storage device~~ disk drive and stored in the data storage unit are the same, updating the serial data stored in the data storage unit

by means of the write data, and transferring the updated serial data to the ~~storage device~~ disk drive; and

when, with respect to the received write data, a block of data in said storage area of the ~~storage device~~ disk drive and the serial data read from the storage area of the ~~storage device~~ disk drive and stored in the data storage unit are different, generating a security code based on the serial data stored in the data storage unit, adding the generated security code to the serial data stored in the data storage unit, transferring this serial data having the security code added thereto to the ~~storage device~~ disk drive, reading the serial data stored in the block in the storage area of the ~~storage device~~ disk drive constituting the write destination of the write data, and updating the data stored in the data storage unit by means of the write data.

12. (Previously presented) The control method for the data transfer device according to claim 11, wherein serial write data that is serially received by the data receiver is not necessarily transferred to successive areas of the block in the order in which this data is received.